



**Project acronym:** BAOFOOD

**Project title:** Enhancing local food security and nutrition through promoting the use of Baobab (*Adansonia digitata* L.) in rural communities in Eastern Africa

## **Training manual for improved harvesting and handling of baobab fruits**

Although baobab fruits are naturally dry when ripe, microbiological contamination can occur if the fruits are not handled correctly. This manual aims to give insights into improved harvesting and handling of baobab fruits from harvesting, via storage up to consumption - thus to fully be able to enjoy the benefits of the highly nutritious baobab fruits! Please be aware that the manual has been developed fitting the circumstances in Kilifi, Kenya, the main project region. Thus differences (e.g. with regard to harvesting times) might occur in other areas where baobab trees are naturally distributed.

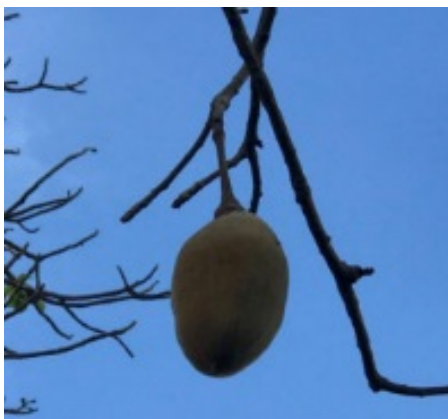
Project website address: [www.baofood.de](http://www.baofood.de)



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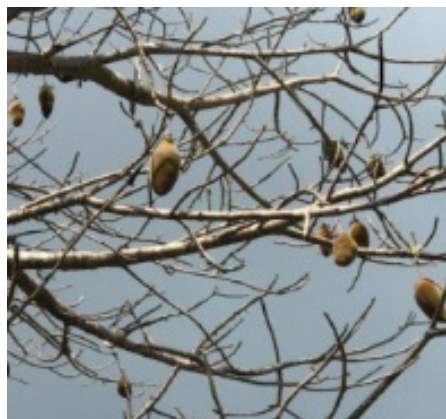
## Baobab fruit pod harvesting



Ripe, ready baobab pods on tree

**YES**

- Baobab pods should be fully grown
- Baobab pods should be dry
- Mature baobab pods have a brown shell
- Baobab pods mature at different rates, so harvesting should be selective
- Pods that are ripe are dry inside and the seeds are hard



Young, immature baobab pods on tree

**✗**

- Immature Baobab pods should not be harvested
- Do not harvest all the pods at the same time as some will not be ready
- Pods that are not ready may be smaller and greenish/yellow in colour
- Pods that are not ready are still wet inside and the seeds are soft

## Harvesting season



Calendar with right and wrong month for harvesting  
(applies to Kilifi County, Kenya)

**YES**

- Dry conditions are ideal for Baobab pod harvesting
- Current season Baobab pods only should be harvested
- Baobab pods are fully mature and ready for harvest in the dry season



Wet season with rain



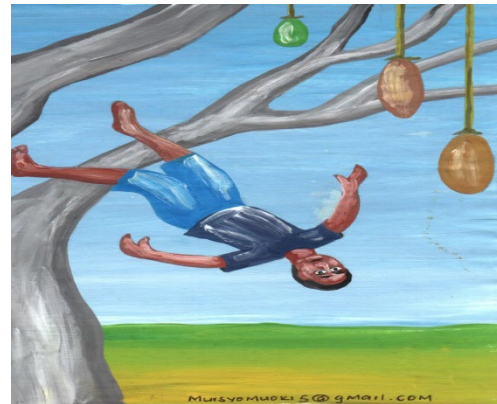
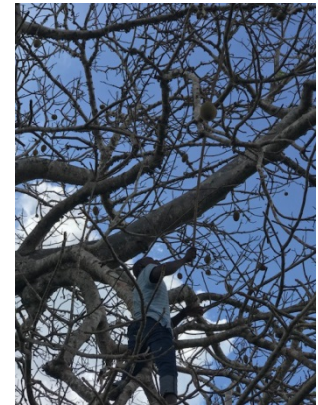
Baobab pulp from earlier seasons. Colour changed from creamish to brownish

**NO**

- Harvesting Baobab pods in the wet season or in rain will lead to moulds developing and this affects quality badly
- Baobab pods are not ready for harvest in the rains as they are not fully mature
- Baobab pods from earlier seasons should not be harvested or mixed with current season harvests



## Harvesting methods for baobab pods



**YES**

- Pods can be harvested by hand when the pods are ready and are within reach
- Pods can be allowed to drop and fall on sheeting on the ground to prevent contamination
- Long poles with a hooked end can be used to access high pods when ready
- Long poles with a sickle or a knife attached to the end can be used to access high pods

**✗**

- Higher pods can be accessed by climbing but this is not recommended as it can be dangerous
- Take care not to have an accident
- Do not cut the tree branches to access high fruits
- Do not cut the tree to access the fruits

## Baobab fruit collection



Clean bag used for Baobab pod collection

**YES**

- Baobab pods should be collected every day from under the trees so as to prevent contamination
- Baobab pods should be collected into a clean bag that is used only for Baobab pods
- This is to prevent the pods from picking up dirt, moisture and other contamination from the earth



Unsuitable bag being used for pod collection

**X**

- Baobab pods should not be left on the ground long as they will become contaminated
- Baobab pods should be collected soon after falling from the tree so they do not become broken and so that animals and chickens cannot spoil them
- Dirty bags that are used for other things should never be used to collect Baobab pods
- Dirty bags can contaminate Baobab pods with moisture, mud, chicken manure etc.



## Baobab fruit selection



Undamaged baobab pods being collected

**YES**

- Only collect whole Baobab pods and not those that have been damaged
- Undamaged Baobab pods will have dried out naturally and properly and the powder inside will be fresh and uncontaminated
- The undamaged Baobab pod shell protects the powder and the seed inside the pod and prevents onset of yeast and moulds as well as prevents against access to bacteria and other pathogens



Examples of damaged pods - split open, infested, insect damage, or cracks

**NO**

- Baobab pods that have been damaged in the fall from the tree or have been damaged in any other way before harvest open up ways for the powder and the seed inside to deteriorate in colour, flavour, nutrient availability and benefits for consumption
- Baobab pods that have damage including splits in the shell provide an open gateway for moisture damage, pathogen access and insects to gain access
- Baobab pods that show evidence that they have been accessed by insects also will have deteriorated in condition and the pathway opened up by the insects also lets in moisture
- Any Baobab pods that show damage in any way should be discarded completely

## Baobab fruit storage



Baobab pods stacked in good, dry conditions above the ground and away from any other materials

**YES**

- Baobab pods should be stored in clean conditions and should not be stacked in big piles
- Baobab pods need to dry out their remaining moisture in good clean dry conditions
- Storage above the ground and not in big piles enables easy air circulation that helps draw out the remaining moisture
- Storing in good clean dry conditions prevents contamination from any other pathogens or banned materials
- Rotating the pods within the pile will help prevent buildup of moisture and resulting yeasts and mould



Big piles of Baobab pods; Baobab pods stored with other produce; Baobab pods stored next to synthetic materials like pesticides etc.

**✗**

- Storing Baobab pods in big piles helps moisture build up inside the pile and growth of yeasts and moulds. These grow inside the pods and makes powder unsaleable
- Contact with dirt, manure, chemicals in storage can contaminate the powder and the seeds when shells are broken to take out the powder and seed
- Baobab pods stored next to or near diesel drums, pesticide cartons - either empty or full - can easily be contaminated and the resulting powder and seed is unsaleable



## Baobab fruit processing (cracking and pulp extraction)



Clean machete, opened pod with pulp inside, pulp being cleaned from pod, pulp placed in clean bag;

# YES

- Semi-processing the Baobab pods means cracking open the pods, pulling out the dry pulp and seed and packing into bags for sale or consumption
- Time between cracking open pods and selling/consumption should be as short as possible
- Processing should take place in clean room, on a clean table, off the ground
- Once pulp is taken from the pod it should be immediately placed in a clean new bag or consumed
- Full bag should be securely closed and stored in clean dry conditions off the floor

Dirty processing conditions, badly opened pod, pulp extracted with dirty hands and placed in dirty bags

# ✗

- Processing good food in poor conditions will inevitably lead to poor quality and contaminated food products
- Processing on the floor gives easy access to foreign objects such as stones, pathogens such as *E. coli* and other forms of dirt and bacteria
- Using old or unclean bags will lead to contamination from whatever else has been in those bags before

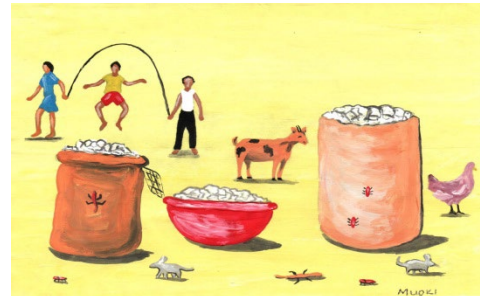
## Processing tools and actions



Washing hands (with soap) before starting cracking the pods, baobab pulp sold at market

# YES

- Only people that are well and healthy should actively extract the Baobab pulp from the pods
- Processing should be carried out only with clean hands and by people without wounds or sores on their hands and not by people that show signs of ill health
- Any time processors move away from the processing area they should then ensure that their hands are clean before coming back to extracting Baobab pulp
- Good quality Baobab pulp will lead to better prices at markets and contribute to healthy diets!



Working on baobab extraction with children playing, livestock close by, sores on hand

# ✗

- Pathogens, dirt, germs, bacteria are all easily passed on to the Baobab pulp if poor hygiene conditions are allowed
- People with open sores, diarrhea, other unhealthy aspects including vomiting should not process Baobab pulp as this risks infecting and contaminating the Baobab pulp
- Those with children should ensure the children are not inside the processing area and if they are attended to during the processing activity then the processor should ensure that hands are cleaned before resuming processing so as to prevent contamination of the pulp